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UNITED STATES OF AMERICA  
IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION

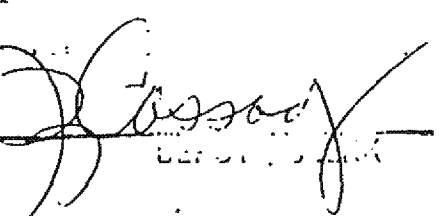
FRANK J. KELLEY, Attorney  
General for the State of  
Michigan, ex rel MICHIGAN  
NATURAL RESOURCES COMMISSION,  
MICHIGAN WATER RESOURCES  
COMMISSION, and DR. RONALD  
SKOOG, Ph.D., Director of  
the Michigan Department of  
Natural Resources

Plaintiffs,

vs.

BASF WYANDOTTE CORPORATION,

Defendant.

ATTEST  
Clerk  
BY 

Civil Action  
No. 83-CV-4712-DT

Judge Avern Cohn  
P-12030

CONSENT DECREE

The parties, Frank J. Kelley, Attorney General for the State of Michigan, Frank J. Kelley, ex rel. Michigan Natural Resources Commission, Michigan Water Resources Commission, and the Director of the Michigan Department of Natural Resources (hereinafter jointly referred to as "MDNR"), and BASF Wyandotte Corporation (hereinafter "BWC"), by their respective attorneys, having consented to the entry of this Consent Decree,

NOW, THEREFORE, before the taking of any testimony, upon the pleadings, and without admission or adjudication of any issue of

fact or law herein, it is hereby ORDERED, ADJUDGED, AND DECREED as follows:

I. JURISDICTION

This Court has jurisdiction over the parties and subject matter of this action under 28 U.S.C. §1331, 42 U.S.C. §9613 and 42 U.S.C. §6972. This Court further has pendent jurisdiction of the parties and subject matter of this action with regard to claims under State of Michigan 1929 PA 245, as amended, MCL 323.1 et. seq., the Water Resources Commission Act, and 1970 PA 127, MCL 691.1201 et. seq., the Anderson-Rockwell Environmental Protection Act.

II. PARTIES BOUND

This Consent Decree shall apply to and be binding upon the parties to this Consent Decree, their officers, employees, agents, successors and assigns, and upon all persons, firms, subsidiaries and corporations acting under, through or for, or in active concert or participation with the parties in the performance of any obligations hereunder.

### III. THE SITES

The property which is the subject of this Consent Decree (hereinafter "the Sites") is commonly referred to as the "North Works" and the "South Works" of BASF WYANDOTTE CORPORATION, and is located in the City of Wyandotte, Michigan. A description of the Sites appears in Appendix A.

### IV. PURPOSE OF THIS CONSENT DECREE

It is the mutual intent and purpose of the parties that BWC shall, at its own and sole expense, control conditions at the Sites which could endanger public health, welfare, or the environment and take measures to prevent the flow of contaminated groundwater from the Sites to the Detroit River by undertaking the specific activities set forth in Section V of this Consent Decree.

### V. REMEDIAL PROGRAMS

BWC shall accomplish programs of remedial action at the Sites, consisting of a site modification program, a monitoring program, and a maintenance program. The remedial action programs for the North and South Works are set forth in Appendix B and Appendix C attached hereto.

VI. DISCONTINUANCE OF OPERATION  
OF REMEDIAL ACTION PROGRAM

A. BWC shall give notice to MDNR of its intent to discontinue operation of any remedial program herein. Notice of BWC's intent to shut down any groundwater monitoring, collecting or treating system described by this document shall precede the shut down by at least sixty (60) days. MDNR shall respond affirmatively or negatively to such notice within sixty (60) days.

No remedial system within a particular area of the South Works may be discontinued prior to the expiration of thirty (30) years from the date of entry of this Decree unless BWC has given the notice described in this paragraph and can demonstrate that the required concentration levels of contaminants have been achieved in each well or drain comprising the system in that particular area and in each monitor well in the area served by the system for the required sampling period specified for that particular area; provided however, that if any remedial system on the South Works has not been certified operational pursuant to Paragraph IX.D. within eighteen (18) months of entry of this Consent Decree, the thirty (30) year period shall begin to run from the date that such system has been certified operational. If BWC wishes to discontinue collecting the groundwater at any individual extraction system within a particular remedial system on the South Works, the procedure set forth in Paragraph F.3. in Appendix C will control.

No extraction well system within a particular area of the North Works, nor the treatment system serving any such extraction well system, may be discontinued prior to thirty (30) years from the date that such systems become operational unless BWC has given such notice and can demonstrate that the required concentration levels of influent and effluent of the treatment system and in each monitor well in the area served by the extraction well system have been achieved for the required sampling period specified for that particular area. If BWC wishes to discontinue any individual wells within an extraction well system or treatment system on the North Works, the procedure set forth in Paragraph D of Appendix B will control.

A dispute by the parties regarding the adequacy of any demonstration under VI.A. shall be resolved by the Court. In the resolution of any such dispute, BWC shall bear the burden of persuasion by a preponderance of the evidence.

B. Before the operation of any remedial system is discontinued, MDNR may request that such system be modified, relocated or continued. BWC shall respond to such a request within sixty (60) days. Any disagreement by the parties regarding modification, relocation or continued operation of any system shall be resolved by the Court. Except as provided in VI.A., MDNR shall bear the burden of persuasion by a preponderance of the evidence that such

modification, relocation and/or continued operation is necessary to protect the public health, welfare or the environment.

C. Where MDNR is requesting modification, relocation and/or operation of a remedial system beyond thirty (30) years from the date of entry of this Consent Decree, MDNR shall bear the burden of persuasion by a preponderance of the evidence that such modification, relocation and/or continued operation is necessary to protect the public health, welfare or the environment.

D. In the event of any dispute under this paragraph, no system shall be discontinued until ordered by the Court.

VII. APPROVALS; NOTICE OF DISAPPROVAL  
OR INADEQUACY

A. Approvals

Except as otherwise specifically provided in this Consent Decree or the Appendices, the approval of any proposed action, or of any certification, report, information or data submitted by BWC to MDNR pursuant to this Consent Decree, shall be effective either upon written notice to BWC or upon the expiration of a period of sixty (60) days from the receipt of notice of the proposed action or of such certification, report, information or data by MDNR, whichever shall occur earlier. This 60-day period may be extended upon agreement between BWC and MDNR.

B. Notice of Disapproval or Inadequacy

Except for those actions referred to in Section XII of the Consent Decree, in the event MDNR should disapprove or find inadequate any proposed action, or any certification, report, information, or data submitted by BWC under this Consent Decree, it shall provide written notice thereof to BWC within 60 days of receipt of a notice of a proposed action or of such certification, report, information or data, which notice shall include:

1. A detailed statement of the bases for MDNR's conclusion or request;
2. A description of what further action in its opinion is required to fulfill or effectuate any provisions of this Consent Decree, such description to include, without limitation, the need for verification of data or for obtaining additional data or for implementing specified actions; and
3. A proposed schedule for submission of any additional information.

It is the intent of the parties that this notice fully set forth and describe any disapproval or finding of inadequacy and the bases therefore; however, an insufficiency in the notice

shall not be deemed a waiver by MDNR of any such disapproval or finding of inadequacy.

C. Submission to Court

In the event an agreement cannot be reached between BWC and MDNR concerning MDNR's disapproval or finding of inadequacy, BWC shall file a petition with the Court setting forth the matter in dispute. In any proceedings on such petition, BWC shall have the burden of persuasion by a preponderance of the evidence unless the burden of persuasion is assumed by MDNR under any other provision of this Consent Decree.

D. Resolution of Disputes During  
Course of Site Modification Program

In the event a dispute should arise between BWC and MDNR during construction of the Site Modification Program, BWC shall, upon demand by MDNR, stop construction and shall, unless the dispute is resolved, file a petition with the Court setting forth the matter in dispute.

VIII. DELAY IN PERFORMANCE

If any event occurs which delays or could delay the timely achievement of the requirements of this Consent Decree (including any delays resulting from the obtaining of any necessary permits), BWC shall notify MDNR within three days in writing of



the delay or anticipated delay as appropriate, describing in detail the anticipated length of the delay, the cause or causes of delay, the measures taken and to be taken by BWC to prevent or minimize the delay, the schedule by which these measures will be implemented, and requesting approval of a revised schedule. If the delay or anticipated delay has been or will be caused by circumstances beyond the reasonable control of BWC, the time for performance hereunder shall be extended for a reasonable period of time as is appropriate under the circumstances, provided that an extension of the time for performance of one event shall not necessarily entail an extension of the time for performance of subsequent events. Increased costs of performance of the requirements of this Consent Decree shall not be circumstances beyond the reasonable control of BWC justifying an extension in the time for performance. In the event MDNR disapproves BWC's request for a delay in performance, BWC may promptly submit the matter to this Court for resolution in accordance with Section VII.C.

#### IX. COORDINATION AND NOTIFICATION

##### A. Designation of Coordinator

The parties shall designate a coordinator and an alternate within 15 days following entry of this Consent Decree. At any

time, the parties may appoint new coordinators, alternates or both and shall so advise the other parties in writing. To the maximum extent possible, communications between the parties shall be made between coordinators. Whenever, pursuant to this Consent Decree, a report, notice, approval or other document is required to be forwarded by one party to another, it shall be sent by certified or registered mail, return receipt requested, to the attention of the coordinators at the addresses specified below.

To MDNR: Director  
Michigan Department of Natural Resources  
Box 30028  
Lansing, Michigan 48909

To BWC: General Manager  
Wyandotte Works  
BASF Wyandotte Corporation  
1609 Biddle Avenue  
Wyandotte, Michigan 48192

B. Designation of Field Representative

MDNR shall designate a field representative and an alternate within fifteen (15) days following entry of this Consent Decree. The field representative shall have authority to act on behalf of MDNR on matters relating to the site work, measurements during construction, and compliance with the specifications of this Consent Decree. The MDNR field representative shall be available for consultation during construction activities, which activities

will be scheduled by BWC and its contractors. In the event of a disagreement among the BWC project manager and the MDNR field representative, the matter shall be referred to the coordinators for resolution. In the event the matter is not resolved by the coordinators, BWC shall file a petition with the Court in accordance with Section VII.C. of this Consent Decree.

C. Notice of Commencement of Construction

BWC shall provide written notice to the MDNR coordinators and to the Attorney General of Michigan at least thirty (30) days prior to the commencement of construction of the Site Modification Program set out in Section V. Subsequent notice of construction activities shall be based upon a written schedule provided by the BWC project manager to the MDNR field representative.

D. Certification of Completion by BWC

On or before December 31, 1986, BWC shall provide to MDNR a final certification that the Site Modification Program described in Section V of this Consent Decree has been completed and placed in operation in accordance with the requirements of this Consent Decree.

X. INFORMATION

All data, information and other documents in the possession of BWC and not privileged, which relate to obligations undertaken by BWC pursuant to this Consent Decree, shall be provided by BWC to MDNR upon request. Documents or information entitled to confidentiality under applicable Michigan law shall be disclosed by MDNR only in accordance with the procedure set out in MCL 299.528.

XI. ACCESS TO SITESA. Access by MDNR Representative

BWC shall permit the MDNR field representative, and such other agency employees, contractors and consultants as the field representative requires to assist him in his duties under this Consent Decree, to enter the Sites at all reasonable times. The field representative and the persons assisting him shall at all times observe Michigan OSHA, OSHA, NIOSH, and any applicable EPA rules.

B. Taking of Samples

BWC or MDNR may take any samples from the North or South Works to demonstrate or check compliance with this Consent

Decree. Such samples shall be split with the other parties upon request. Any analysis not covered by Section V. shall be conducted in accordance with then-currently applicable laws, regulations or such other analytical procedures as may be agreed upon by BWC and MDNR.

C. No Limitation on Entry

Nothing in this Consent Decree is intended to limit in any way the right of entry or inspection or sampling of MDNR that it may otherwise have by operation of any law.

XII. SALE OR LEASE OF NORTH OR SOUTH WORKS SITES

Should BWC sell or lease any portion or all of the North or South Works during the term of the remedial action program set forth in this Consent Decree, BWC shall retain legal right of access (whether by easement or otherwise) to those portions of the North or South Works where subsurface drains, groundwater extraction wells, pumping systems, discharge systems, monitor wells and piezometers, etc., are located to ensure that its obligations under the Consent Decree can be carried out. Sixty (60) days prior to any intended sale or lease, BWC shall deliver to MDNR and the Attorney General of Michigan copies of any proposed documents retaining such legal right of access, which docu-

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ments shall demonstrate that BWC has in fact retained legal right of access (whether by easement or otherwise) to those portions of the North and South Works where subsurface drains, groundwater extraction wells, pumping systems, discharge systems, monitor wells and piezometers, etc., are located to ensure that its obligations under the Consent Decree can be carried out. The State shall have sixty (60) days from receipt of such documents to object in writing thereto. Any objection by the State shall specify in detail how such documents are inadequate to ensure the discharge of BWC's obligations under the Consent Decree. Any dispute by the parties shall be resolved by the Court in accordance with Section VII.C. hereof, except that MDNR shall bear the burden of persuasion by a preponderance of the evidence.

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XIII. FINANCIAL RESPONSIBILITYA. Funding of Capital Expenditures

BWC shall fund all capital expenditures and pay all expenses necessary to accomplish the measures set forth in this Consent Decree except that BWC shall not reimburse MDNR for any of its expenses in connection with this Consent Decree, other than those provided for in Section XV.

B. Certification of Net Worth

1. Upon entry of this Consent Decree with the Court, BWC shall submit to MDNR either a statement certified by its chief financial officer that its net worth is not less than Twenty Million (\$20,000,000) Dollars or a copy of its financial statements for the fiscal year last ended, showing a net worth of not less than Twenty Million (\$20,000,000) Dollars. If at any time prior to the completion of the construction of the remedial programs described in Appendix B or C BWC's net worth decreases to below Twenty Million (\$20,000,000) Dollars, BWC shall immediately notify MDNR and shall promptly provide security in an amount sufficient for the performance of BWC's obligations hereunder through the completion of construction. Such security may take the form of a performance bond, a letter of credit, the guaranty

of a corporation having a net worth of not less than twenty Million (\$20,000,000) Dollars, or such other form of security to which the parties may hereafter agree.

2. If, subsequent to the completion of construction, but prior to the termination of BWC's other obligations under this Consent Decree, BWC's net worth decreases to below Ten Million (\$10,000,000) Dollars, BWC shall immediately notify MDNR, and shall promptly provide security in an amount sufficient for the performance of BWC's remaining obligations under this Consent Decree. Such security may take the form of a performance bond, a letter of credit, the guaranty of a corporation have a net worth of not less than Ten Million (\$10,000,000) Dollars, or such other form of security to which the parties may hereafter agree.

XIV. SETTLEMENT, RELEASES, AND EFFECT  
OF THIS CONSENT DECREE ON OTHER  
LAWS AND THIRD PARTIES

A. All Work to be Done in Accordance  
With Applicable Laws and Regulations

All work undertaken by BWC pursuant to this Consent Decree is to be performed in accordance with all federal, state and local statutes, regulations and ordinances including, but not limited to, the Occupational Safety and Health Act, 29 U.S.C. 651, et seq., Clean Water Act, 33 U.S.C. 1251, et seq., the Water Resources Commission Act, 1929 PA 245, as amended, MCL 323.1, et

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seq., and the Anderson-Rockwell Environmental Protection Act, 1970 PA 127, MCL 691.1201, et seq.

B. No Admissions

This Consent Decree represents a compromise of disputed issues and facts and BWC expressly makes no admission of fact or liability concerning any acts or liabilities asserted against it in this action. Nothing contained in this Consent Decree shall be deemed an admission of fact or liability or evidence of same, nor of any violation of law or regulation.

C. Rights of Third Parties Not Affected

This Consent Decree shall neither create nor affect rights of persons or entities who are not parties of this Consent Decree and who are not described in Section II. of this Consent Decree.

D. No Waiver of Claims Against Third Parties

The State of Michigan does not waive any claims or rights it may have against any person or entity not a party to this Consent Decree.

E. Release

The execution by the parties and the entry by the Court of this Consent Decree shall constitute full settlement of the

claims asserted, or which could have been asserted, on behalf of the Plaintiffs and the State of Michigan in this action and shall constitute a full discharge and release of BWC, its subsidiaries, parent companies, predecessors, affiliates, successors and assigns, and its and their officers, directors, agents and employees from any liability of any kind or nature whatsoever under, but not limited to, the Resource Conservation and Recovery Act, 42 U.S.C. §6901 et seq., the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et seq., the Water Resource Commission Act, 1929 PA 245, MCL §323.1 et seq., the Anderson-Rockwell Environmental Protection Act, 1970 PA 127, MCL §691.1201 et seq., and any other statute, common law, regulation or rule of the United States of America or the State of Michigan, resulting from or in any way relating to

1. The disposal or presence of known chemicals or other known substances at, on or under the Sites prior to the entry of this Consent Decree;
2. The continuing presence of such known chemicals or other known substances at, on or under the Sites subsequent to the entry of this Consent Decree;
3. The migration, discharge or release of such known chemicals or other known substances from the Sites prior to the completion of construction of the Site Modification

Program referred to in Section V. of this Consent Decree; and

4. The migration, discharge or release of such known chemicals or other known substances from the Sites subsequent to completion of construction of the Site Modification Program referred to in Section V. of this Consent Decree, unless such migration, discharge or release results from a violation of this Consent Decree or any discharge permit.

"Known chemicals or other known substances" means chemicals or substances known by MDNR to be present at the Sites as of the date of entry of this Consent Decree.

The State of Michigan specifically retains the right and authority to enforce the terms of this Consent Decree.

#### XV. COSTS

Within fifteen (15) days after entry of this Consent Decree, BWC shall pay the State of Michigan, c/o Chief, Environmental Protection Division, Department of the Attorney General, the sum of Two Hundred Ninety Thousand (\$290,000.00) Dollars for its past and future costs. Each other party to this Consent Decree shall bear its own costs in this action and in the implementation of this Consent Decree.

XVI. SEVERABILITY

It is the intent of the parties hereto that the provisions of this Consent Decree shall be severable, and should any provision be declared by a court of competent jurisdiction to be inconsistent with State or Federal law, and therefore unenforceable, the remaining clauses shall remain in full force and effect.

XVII. RETENTION OF JURISDICTION

This Court specifically retains jurisdiction over the subject matter and the parties for the purpose of enforcing or construing or modifying the provisions of this Consent Decree.

AVERN COHN

AVERN COHN  
United States District Judge


DATED AND ENTERED:

JAN 08 1986

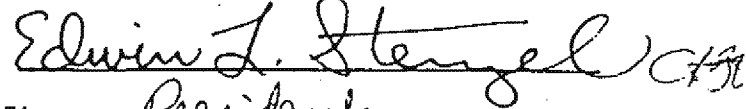
The parties agree and consent hereto.

FRANK J. KELLEY  
Attorney General

  
STEWART H. FREEMAN  
Assistant Attorney General in Charge  
Environmental Protection Division

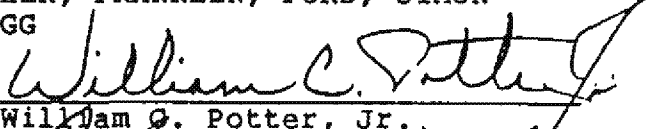
  
STEPHEN F. SCHUESLER  
Assistant Attorney General  
Environmental Protection Division  
Department of Attorney General  
720 Law Building  
Lansing, Michigan 48913

BASF WYANDOTTE CORPORATION  
a Michigan corporation, Defendant

By:  *CS*  
Its President

and by

FISCHER, FRANKLIN, FORD, SIMON  
& HOGG

By:   
William C. Potter, Jr.

and   
Thomas M. Woods

Attorneys for Defendant  
BASF Wyandotte Corporation

1700 Guardian Building  
Detroit, Michigan 48226

## APPENDIX A

### PROPERTY DESCRIPTION NORTH and SOUTH WORKS

#### NORTH WORKS

The land located in the City of Wyandotte, Wayne County, State of Michigan described as being part of fractional Sections 21 and 28, T. 3 S., R. 11 E. and generally described as being bounded on the north by Perry Place, on the east by the U.S. Harbor Line of the Detroit River, on the south by Mulberry Street and of the west by Biddle Avenue. Exhibit I, Appendix B is a generalized map of the North Works.

#### SOUTH WORKS

The land located in the City of Wyandotte, Wayne County, State of Michigan, described as being part of fractional Section 32, T. 3 S., R. 11 E. and generally described as being bounded on the north by Pine Street, on the east by the U.S. Harbor Line of the Detroit River, on the south by Wye Street and on the west by Biddle Avenue. Exhibit I, Appendix C is a generalized map of the South Works.

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APPENDIX B

N O R T H   W O R K S

REMEDIAL PROGRAM

INTRODUCTION

BWC will undertake a remedial program that addresses the movement of groundwater towards the Detroit River and the City of Wyandotte sewer system from Locations A, B and C as shown on Exhibits I through V of this appendix.

A. EXTRACTION SYSTEMS

A groundwater extraction system shall be installed in Locations A, B, and C. The approximate position of each extraction system is shown on Exhibit I. Exhibits II, III and IV provide information on the number and placement of extraction wells and piezometers for Locations A, B and C respectively. The number of wells and the rate of withdrawal from the wells for each location shall be at all times sufficient to halt the flow of contaminated groundwater to the Detroit River and the City of Wyandotte sewer system by maintaining a hydraulic gradient toward the extraction wells.

BWC shall maintain the extraction wells including cleaning, replacement of screens and replacement of any extraction well that will not produce water due to failure of well components. A piezometer system shall be installed and the water level will be measured on the schedule established in paragraph D of this appendix, to demonstrate the creation and maintenance of an inward hydraulic gradient at Locations A, B and C.

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B. TREATMENT SYSTEMS

A groundwater treatment system(s) shall be installed to treat the water removed by each extraction well system pursuant to the Implementation Schedule. BWC shall maintain the treatment system(s) until the conditions for cessation of operation are met.

C. IMPLEMENTATION SCHEDULE

BWC shall complete installation of the remedial program described in this appendix on or before December 31, 1986.

BWC shall develop the basis of design of an activated carbon system, or its equivalent, construct such system and commence its operation on or before December 31, 1986. The basis of design and the final process flow diagram and operations manual shall be submitted to MDNR for review and approval which shall be completed within thirty (30) days of submittal.

D. MONITORING

Piezometers/monitor wells shall be installed in Locations A, B and C approximately as shown on Exhibits II through IV. The specific locations of the piezometers and monitor wells shall be described on as built plans.

The water level in each piezometer, and each extraction well shall be measured monthly for the first year following installation of the piezometers and quarterly thereafter. BWC shall demonstrate that an inward hydraulic gradient toward each extraction well system exists that is adequate to halt the flow of contaminated groundwater from the North Works to the Detroit River. Thereafter, the water level elevation in each piezometer shall be measured quarterly.

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MONITORING (Continued)

BWC shall operate all extraction and treatment systems for a period of not less than 15 years. Following that period, BWC may give notice of intent to discontinue operation of any extraction well, extraction system or treatment system if six (6) consecutive samples collected in June and October in each of three (3) consecutive years from such well(s), extraction system, treatment system and associated monitoring well(s) demonstrate that the required concentration levels of contaminants have been achieved, or BWC can demonstrate that the concentration of the chemicals identified in the basis of design are no longer effectively being removed by the treatment system. "The required concentration levels of contaminants" means that the concentrations of contaminants identified in the basis of design of the treatment system(s) are less than the level of detectability described in this paragraph D. If such demonstration is made, such extraction well, extraction system or treatment system may be plugged and abandoned in accordance with the procedures set forth in Paragraph VI of the Consent Decree. In any event, as of the beginning of the twenty-sixth (26th) year of the operation of the system, BWC shall commence such collection and analysis of samples from each extraction well and monitor well then in operation, which collection and analysis shall continue until the end of the thirty (30) year period provided by the Consent Decree. The samples shall be analyzed for the chemicals listed in the basis of design of the treatment system(s).

All analysis required under this Consent Decree shall use EPA Method 624 or 625 as published in the Federal Register on October 26, 1984. Concentrations shall be reported in detectable amounts based on ten (10) times signal-to-noise ratio. When using EPA Method 625, a 1000 ml water sample shall be concentrated to 2 ml of extract.

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E. OPERATION OF THE SYSTEMS

Groundwater extracted and treated by the systems described in the Consent Decree, shall be discharged to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a permit to discharge issued by Wayne County to BWC or to the surface waters under an NPDES permit issued by the State to BWC.

F. OTHER CONDITIONS

Within thirty (30) days of the receipt of any influent or effluent data required under this remedial program, BWC shall provide the Department of Natural Resources with the numerical results.

BWC will provide thirty (30) days prior written notice to the Wayne County Public Works of its intent to discontinue the sampling of any groundwater source discharging to the Wayne County Public Works' Wastewater Treatment Plant.

BWC shall make application to discharge the groundwater collected from these remedial systems to the Wayne County Public Works' Wastewater Treatment Plant. In the event the characteristics of the groundwater require Wayne County to impose pretreatment as a condition precedent to discharge, BWC may elect to comply with the County's pretreatment requirements or, alternatively, BWC may make application for direct discharge to the Detroit River. In the event Wayne County is required to reject the groundwater discharge from any of the above systems, BWC shall make application for the direct discharge of such groundwater

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OTHER CONDITIONS (Continued)

to the Detroit River. Should BWC make application for a permit to discharge groundwater to the Detroit River, the Michigan Department of Natural Resources shall review the application in accordance with then applicable regulations and shall not unreasonably deny the permit. Provided BWC (a) gives notice to MDNR within five (5) working days of receipt of notice by the County of its intent to reject BWC's discharge, (b) applies for a permit for direct discharge to the Detroit River within sixty (60) days following receipt of such notice by the County, and (c) takes all reasonable steps necessary to maintain a permitted discharge to the POTW during the period following the County's adoption of the pretreatment requirements, the groundwater collection systems shall not be operated unless a permit to discharge to Wayne County or, alternatively, to the Detroit River, has been issued and remains in effect. If BWC challenges the necessity for or the validity of any permit condition, BWC shall construct, maintain and operate treatment technology which has been agreed upon by the parties or which has been determined to be appropriate by this Court under Paragraph VII.C. of the Consent Decree until such challenge(s) has been resolved.

Upon application by BWC at any time after a fifteen (15) year period, the Department of Natural Resources shall determine whether the operation of any of the above systems or parts thereof is no longer necessary to comply with conditions established by then existing law or regulations. If the operation of such system(s) is not required, it may be discontinued. BWC shall bear the bur-

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OTHER CONDITIONS (Continued)

den of persuasion by a preponderance of the evidence that continued operation of the system(s) is no longer necessary.

All former observation wells will be plugged.

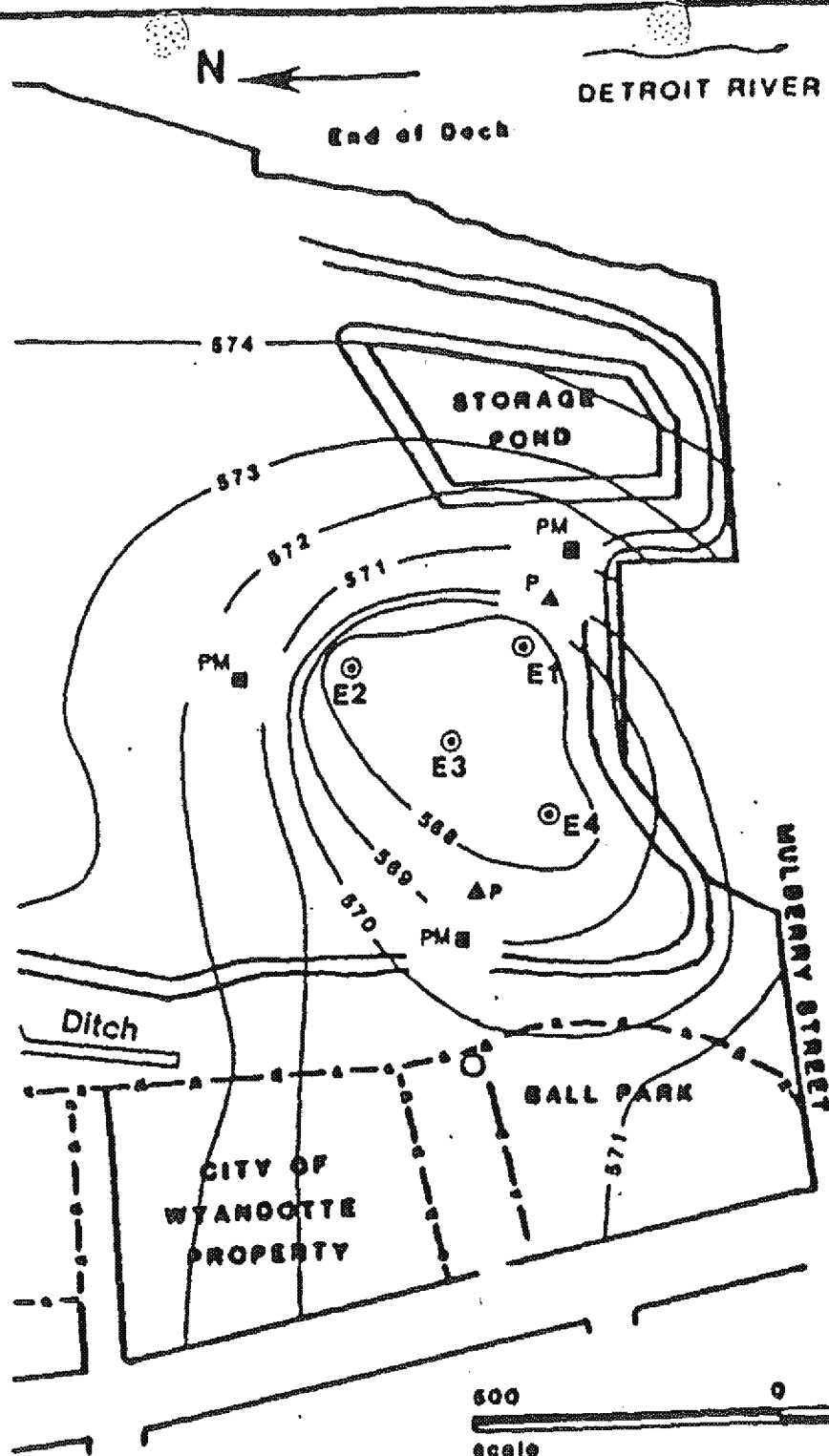
Soils and sludges excavated during construction of any groundwater collection system shall be managed in accordance with the law.

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**LEGEND**

- ⊙ - EXTRACTION WELL
- △ P - PIEZOMETER
- ⊙ PM - PIEZOMETER/MONITOR WELL
- 570- - CONTOUR ON PREDICTED WATER TABLE IN FEET (USO & GSD)

**BASF Wyandotte Corporation  
NORTH WORKS**

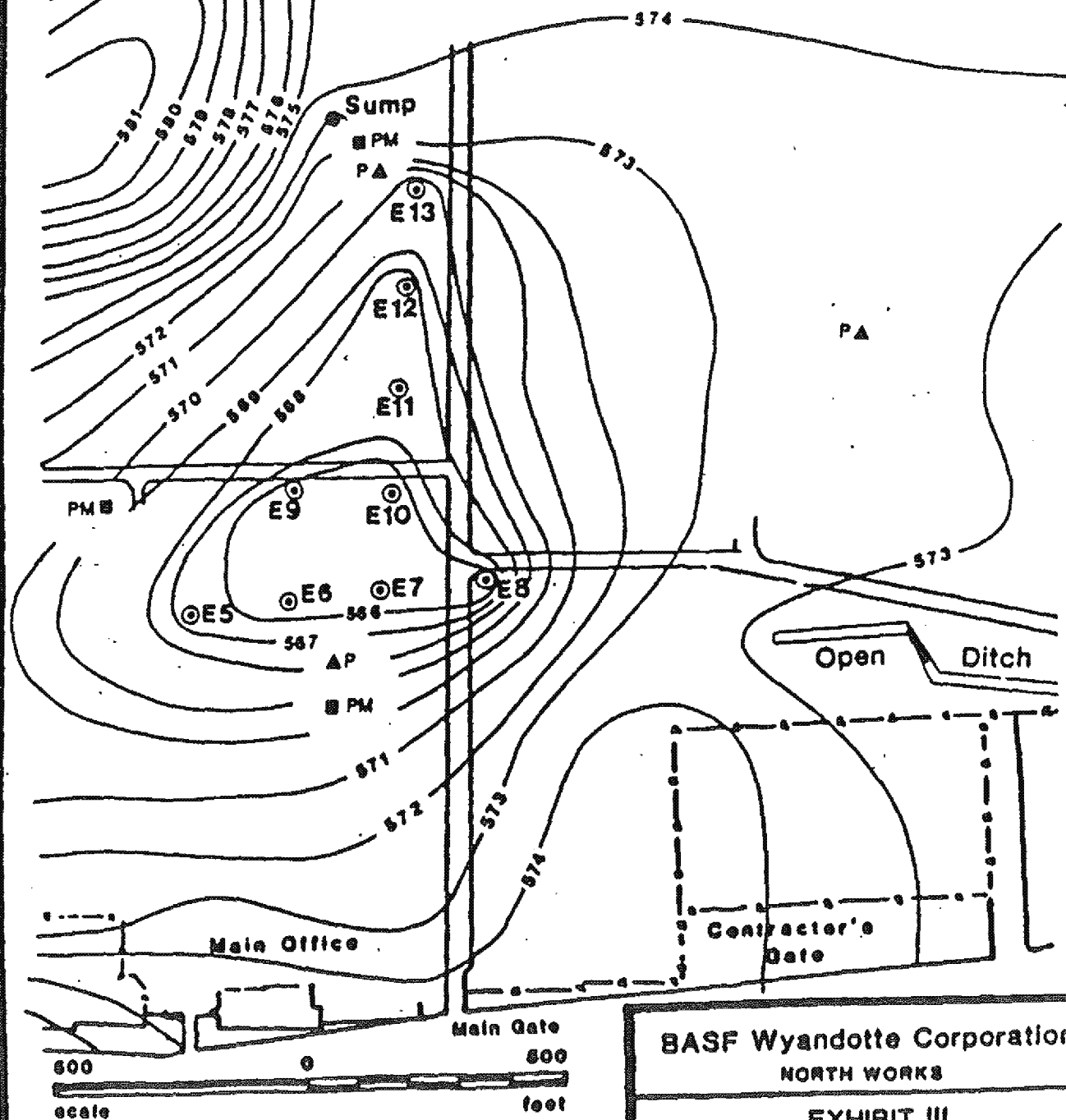
**EXHIBIT II  
REMEDIAL PLAN FOR  
LOCATION A  
AND PREDICTED  
AVERAGE WATER TABLE**

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DETROIT RIVER

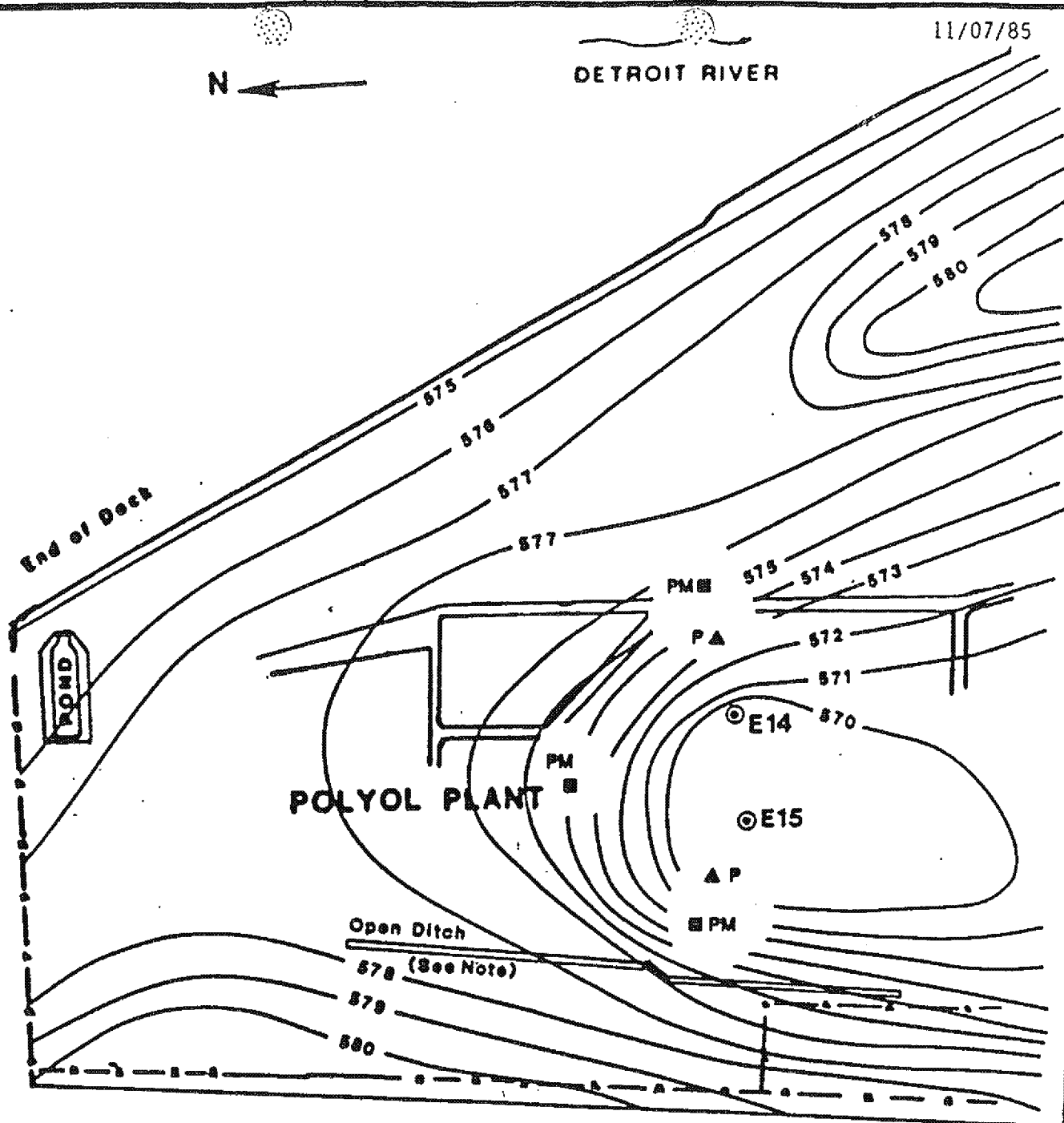
**LEGEND**

- ⊙ - EXTRACTION WELL
- △ P - PIEZOMETER
- PM - PIEZOMETER/MONITOR WELL
- 570- - CONTOUR ON PREDICTED WATER TABLE IN FEET (USO & GSD)

**BASF Wyandotte Corporation**  
**NORTH WORKS**

**EXHIBIT III**  
**REMEDIAL PLAN FOR**  
**LOCATION B**  
**AND PREDICTED**  
**AVERAGE WATER TABLE**

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NOTE: Most ground-water discharge into ditch eliminated during system operation.

500 0 500  
scale feet

#### LEGEND

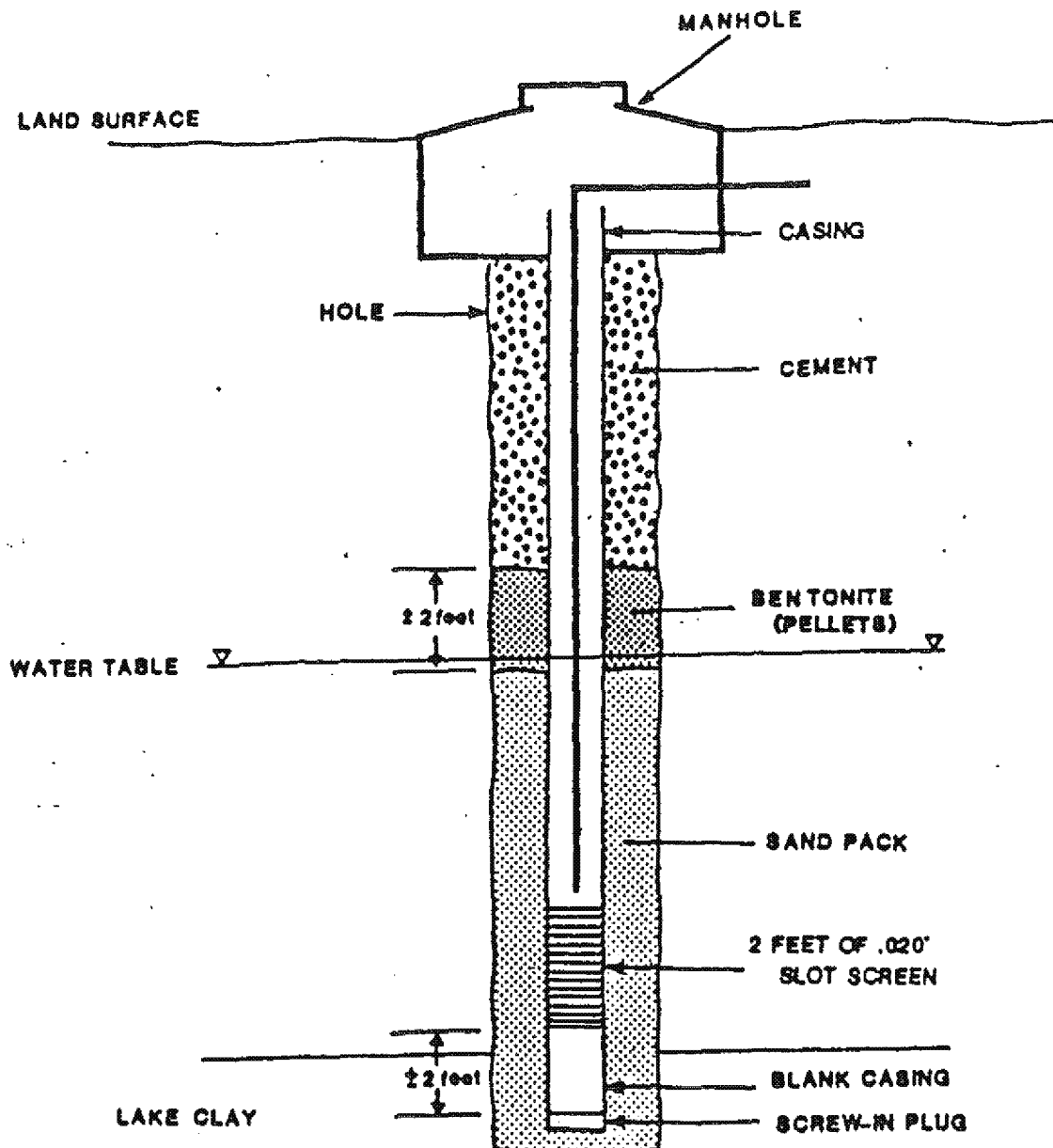
- ⊙ - EXTRACTION WELL
- △ P - PIEZOMETER
- PM - PIEZOMETER/MONITOR WELL
- 570 - - CONTOUR ON PREDICTED WATER TABLE IN FEET (US & GSD)

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NORTH WORKS

EXHIBIT IV  
REMEDIAL PLAN FOR  
LOCATION C  
AND PREDICTED  
AVERAGE WATER TABLE

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NORTH WORKS**

**EXHIBIT V  
CONSTRUCTION DETAILS  
OF EXTRACTION WELLS**

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APPENDIX C  
S O U T H   W O R K S  
REMEDIAL PROGRAM  
INTRODUCTION

BWC will undertake a remedial program for the South Works that addresses: the movement of groundwater towards the Detroit River in Area A and Area B; the presence of materials of concern in a deposit of gray solids in Area C; the tendency of water to pond in the surface in Area C; and the movement of groundwater toward Biddle Avenue in Area D.

A. REMEDIAL PROGRAM FOR AREA A

Area A is located in the southeast corner of the South Works adjacent to the Detroit River (Exhibit I).

The groundwater in this area of the site flows in the general direction of the Southeastern boundary of the site (Exhibit II). A subsurface drain system will be installed along a 400 foot north-south line located 200 feet west of the shoreline which shall halt the flow of groundwater moving from Area A toward the Detroit River and Wye Street. The location and design details of the system to be installed are set forth in the Exhibits III, IV, and V. The drain will be installed at a depth of about 15 feet near the top of the lake clay underlying the surficial materials in this area. A water level measuring device with an accuracy of  $\pm 0.1$  feet shall be installed in the sump.

Groundwater collected through the operation of this system will be discharged to the Wayne County Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. Groundwater will be collected and analyzed from the system during June and October of each year the system is in operation and analyzed for 1,2-dichloropropane, tetrachloroethylene and hexachlorobenzene.

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B. REMEDIAL PROGRAM FOR THE AREA B

Area B lies along the river front north of Area A (Exhibit I).

Groundwater extraction wells will be installed as shown on Exhibit III on  $200 \pm 50$  foot centers  $225 \pm 25$  feet landward from the face of the dock on the Detroit River. The construction details for the extraction wells are shown in Exhibit VI of this appendix. The number of wells and the rate of withdrawal of water therefrom shall at all times be sufficient to halt the flow of contaminated groundwater from Area B to the Detroit River by maintaining the groundwater level in each extraction well at elevation 568 feet or lower. Samples will be collected from the combined flow of all extraction wells in June and October of each year the system is in operation and analyzed for carbon tetrachloride.

The MDNR may designate two (2) extraction wells in the system to be maintained as monitor wells.

BWC shall maintain the extraction wells including cleaning, replacement of screens and replacement of any extraction well that will not produce water due to failure of well components. Water removed by the extraction wells shall be discharged to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. A piezometer system shall be installed and water level will be measured on the schedule established in paragraph F of this appendix, to establish the long term pumping rate for each extraction well.

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C. REMEDIAL PROGRAM IN AREA C

Area C is located in the northern third of the site as shown in Exhibit I. BWC shall install an extraction well system as shown in Exhibit VII. The number of wells and the rate of withdrawal of water therefrom shall at all times be sufficient to halt the flow of contaminated groundwater from leaving Area C and to maximize the pore displacement of the system by maintaining the groundwater level at elevation no higher than 563 feet at Extraction Well No. 5 as shown on Exhibit VIII of this appendix. The water from the extraction well system will discharge via a piping system to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. The construction details are shown in Exhibits VIII and IX.

Samples will be collected and analyzed from the combined flow from all extraction wells in June and October each year the system is in operation for hexachlorobenzene, hexachlorobutadiene and trichloroethylene.

The remedial program for this area will include grading and filling as necessary to eliminate standing water.

D. REMEDIAL PROGRAM FOR AREA D

Area D is located on the western edge of the South Works along Biddle Avenue, as shown on Exhibit I of this appendix.

The groundwater in this area of the site flows to the west in the general direction of Biddle Avenue (Exhibit II). A subsurface drain system will be installed

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REMEDIAL PROGRAM IN AREA D (Continued)

which shall collect the groundwater in Area D and discharge the water collected to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. The location and design details of this drainage system are set forth in Exhibits V and X. A system shall be installed to measure the water level at or near the point of discharge.

Groundwater samples will be collected and analyzed from this system in June and October of each year that the drainage system is in operation for 1,2 dichloropropane, trichloroethylene, and tetrachloroethylene.

A system of three (3) piezometers will be installed in the vicinity of Area D to demonstrate that the slope of the groundwater table is in the direction of the drainage system described above. In the event the building foundations are removed or found not to represent a barrier to the movement of groundwater toward Biddle Avenue during the agreed upon period of operation of the drainage system, the drainage system shall be extended as needed to collect groundwater from Area D.

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E. IMPLEMENTATION SCHEDULE

BWC shall complete installation of the remedial program for the South Works on or before December 31, 1986.

F. MONITORING

1. PURPOSE OF MONITORING

The purpose of the water level and water quality monitoring provisions is to determine whether the remedial systems are meeting the requirements of this Consent Decree.

2. WATER LEVELS

Piezometers, extraction wells and monitor wells shall be installed in Areas A and B at the approximate locations shown in Exhibit III by December 31, 1986.

The water level in each piezometer and each extraction well in Areas A, B and D shall be measured monthly for the first year following installation of the piezometers and quarterly thereafter until a demonstration has been made that the collection systems have halted the flow of contaminated groundwater from these areas. Once this demonstration has been made and reported to the MDNR, no further water level measurements will be required and the piezometers may be plugged unless MDNR, for good cause shown, can demonstrate a need for continuation of the water level measurements within sixty (60) days of receipt of the report.

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### WATER LEVELS (Continued)

The piezometer system required under the program for Area D shall be installed and the required water level measurements will commence within one (1) year after completion of the collection system. The water level shall be measured monthly in each piezometer and in monitor wells MW-3, MW-4, and MW-5 for one (1) year and quarterly thereafter until a demonstration has been made that the flow of contaminated groundwater to the Detroit River has been halted. Once this demonstration has been made and reported to the MDNR, no further water level measurements will be required and the piezometers may be plugged unless MDNR, within sixty (60) days of receipt of the report, can demonstrate a need for continuation of the water level measurements.

### 3. WATER QUALITY

BWC shall operate all extraction systems for a period of not less than fifteen (15) years. Following that period, BWC may give notice of intent to discontinue operation of any single well and/or extraction system if six (6) consecutive samples collected from such well(s), extraction system, treatment system and associated monitoring well(s) in June and October of each of three (3) consecutive years demonstrates that the concentrations of the chemicals listed in Table I below are less than ten (10) times signal-to-noise using EPA Method 624 or 625. All analysis using EPA Method 625 shall be based on a 1000 ml sample concentrated to 2 ml of extract.

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WATER QUALITY (Continued)

TABLE I

Parameter	Remedial Area			
	A	B	C	D
1,2-Dichloropropane	X			X
Tetrachloroethylene	X			
Hexachlorobenzene	X		X	X
Carbon tetrachloride		X		
Hexachlorobutadiene			X	
Trichloroethylene			X	X

\*All monitor wells shall be analyzed for chloroform during the above monitoring for the appropriate area(s).

If concentration levels for the appropriate area(s) are achieved, operation of the extraction well or extraction system(s) may be discontinued in accordance with the procedures set forth in Paragraph VI of the Consent Decree.

In any event, in June and October of each year beginning with the twenty-fifth (25th) year of the operation of the system on the South Works, BWC shall collect and analyze samples from each extraction well and monitor well then in operation, which collection and analysis shall continue until the end of the thirty (30) year period provided by the Consent Decree.

G. OTHER CONDITIONS

Within thirty (30) days of the receipt of any groundwater data under this remedial program, BWC shall provide the Department of Natural Resources with the numerical results.

BWC will provide thirty (30) days prior written notice to the Wayne County Public Works of its intent to discontinue the sampling of any groundwater source discharging to the Wayne County Public Works' Wastewater Treatment Plant.

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OTHER CONDITIONS (Continued)

BWC shall make application to discharge the groundwater collected from these remedial systems to the Wayne County Public Works' Wastewater Treatment Plant. In the event the characteristics of the groundwater require Wayne County to impose pretreatment as a condition precedent to discharge, BWC may elect to comply with the County's pretreatment requirements or, alternatively, BWC may make application for direct discharge to the Detroit River. In the event Wayne County is required to reject the groundwater discharge from any of the above systems, BWC shall make application for the direct discharge of such groundwater to the Detroit River. Should BWC make application for a permit to discharge groundwater to the Detroit River, the Michigan Department of Natural Resources shall review the application in accordance with then applicable regulations and shall not unreasonably deny the permit. Provided BWC (a) gives notice to MDNR within five (5) working days of receipt of notice by the County of its intent to reject BWC's discharge, (b) applies for a permit for direct discharge to the Detroit River within sixty (60) days following receipt of such notice by the County, and (c) takes all reasonable steps necessary to maintain a permitted discharge to the POTW during the period following the County's adoption of the pretreatment requirements, the groundwater collection systems shall not be operated unless a permit to discharge to Wayne County or, alternatively, to the Detroit River, has been issued and remains in effect. If BWC challenges the necessity for or the validity of any permit condition, BWC shall construct, maintain and operate treatment technology which has been agreed upon by the parties or which has been determined to be appropriate by this Court under Paragraph VII.C. of the Consent Decree until such challenge(s) has been resolved.

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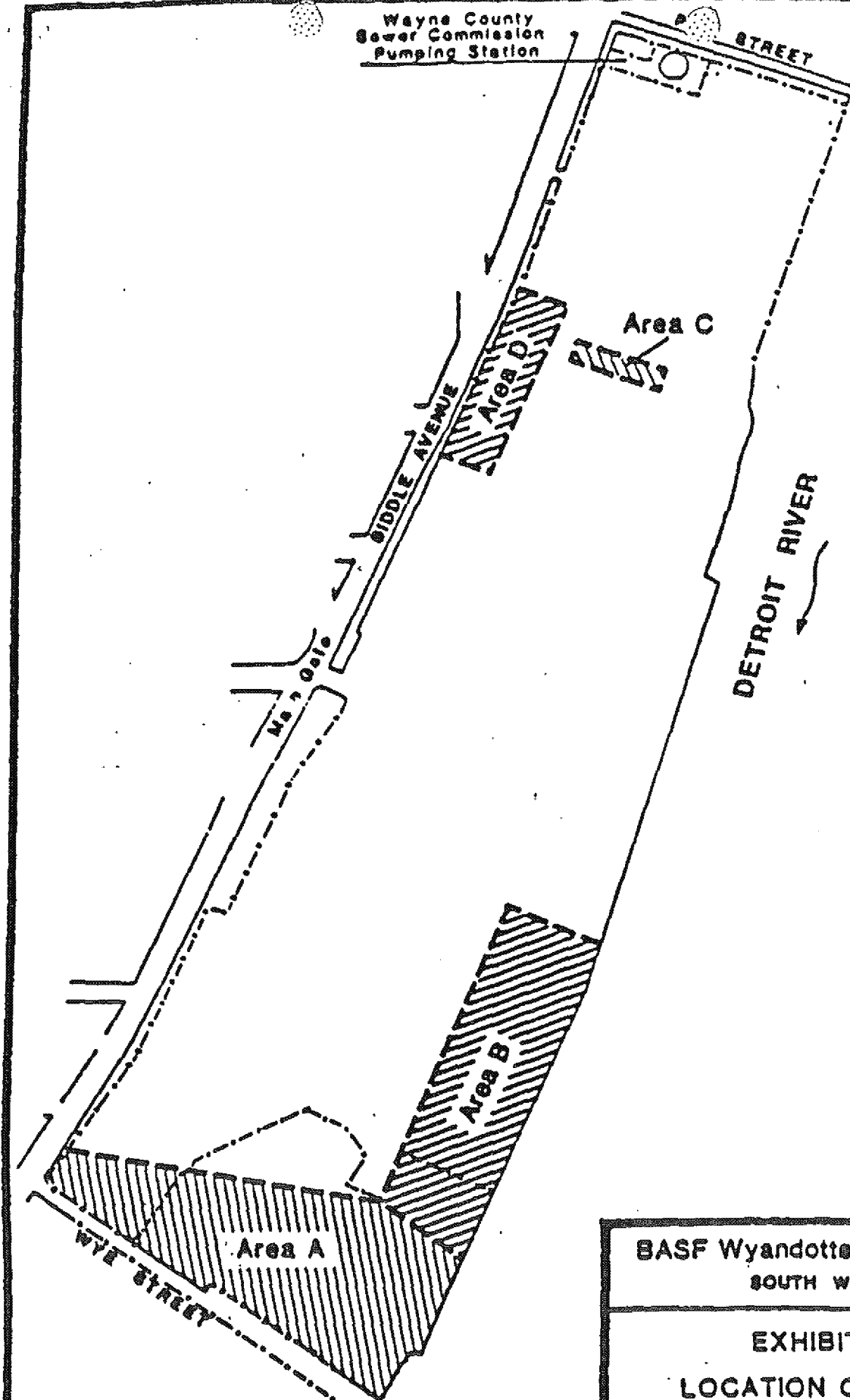
OTHER CONDITIONS (Continued)

Upon application by BWC at any time after a fifteen (15) year period, the Department of Natural Resources shall determine whether the operation of any of the above systems is no longer necessary to comply with conditions established by then existing law or regulations. If the operation of such systems(s) is not required, it may be discontinued. BWC shall bear the burden of persuasion by a preponderance of the evidence that continued operation of the system(s) is no longer necessary.

Soils and sludges excavated during construction of any groundwater collection system shall be managed in accordance with the law.

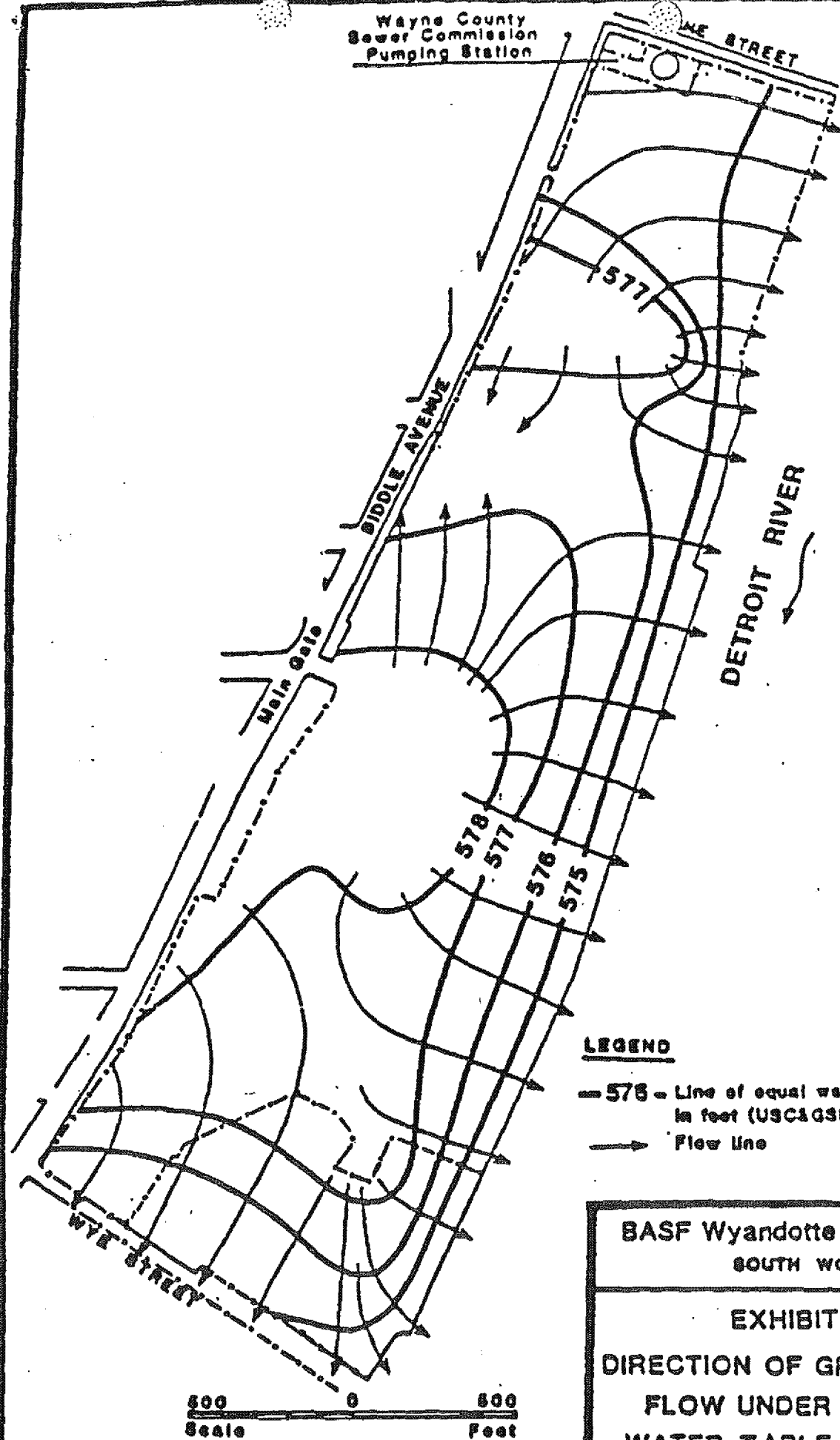
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SOUTH WORKS

EXHIBIT I  
LOCATION OF AREAS  
TO BE REMEDIATED



**LEGEND**

- 578 — Line of equal water-table elevation  
in feet (USC&GSD)
- Flow Line

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SOUTH WORKS**

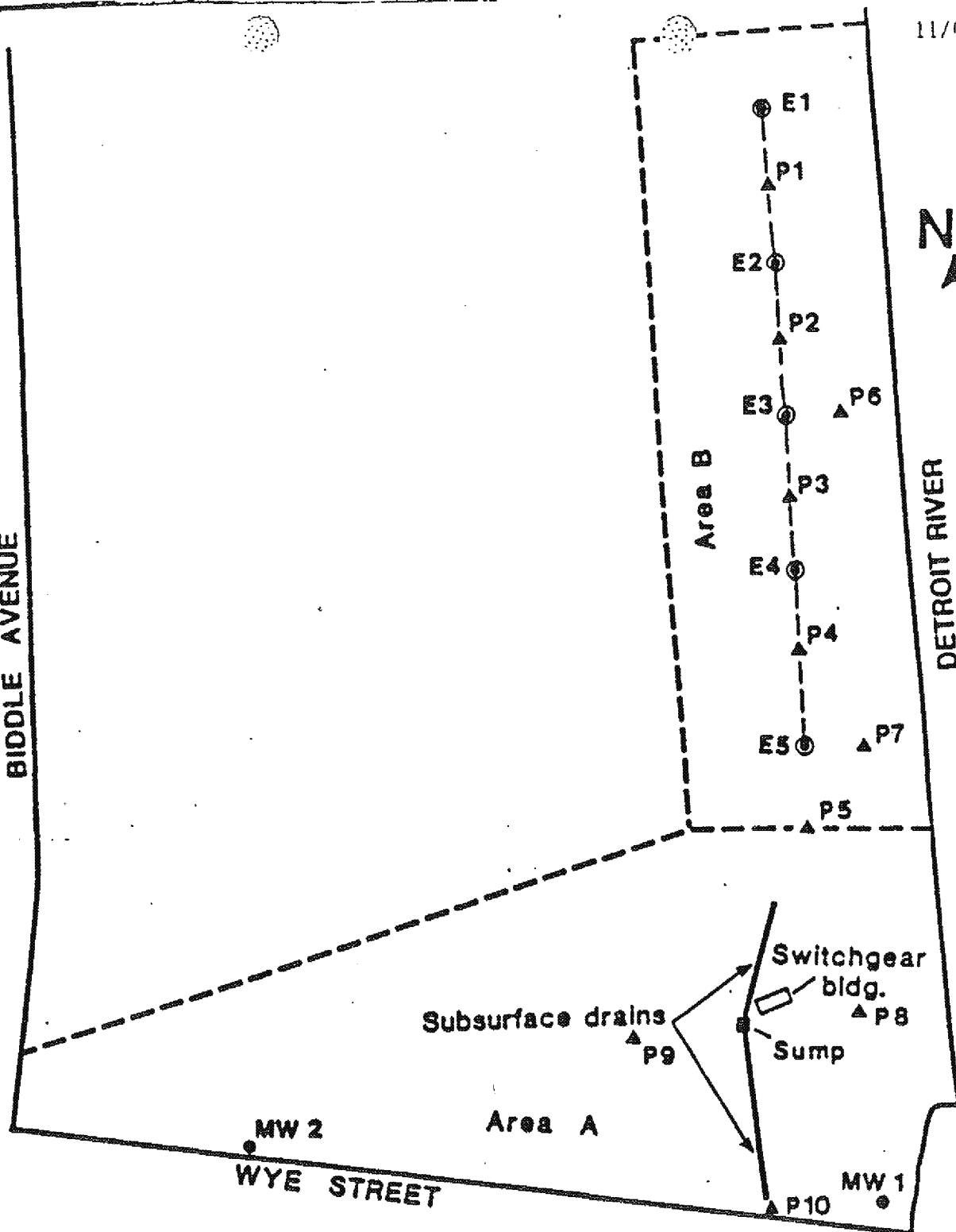
**EXHIBIT II  
DIRECTION OF GROUNDWATER  
FLOW UNDER AVERAGE  
WATER-TABLE ELEVATIONS**

000506

BIDDLE AVENUE



DETROIT RIVER



## LEGEND

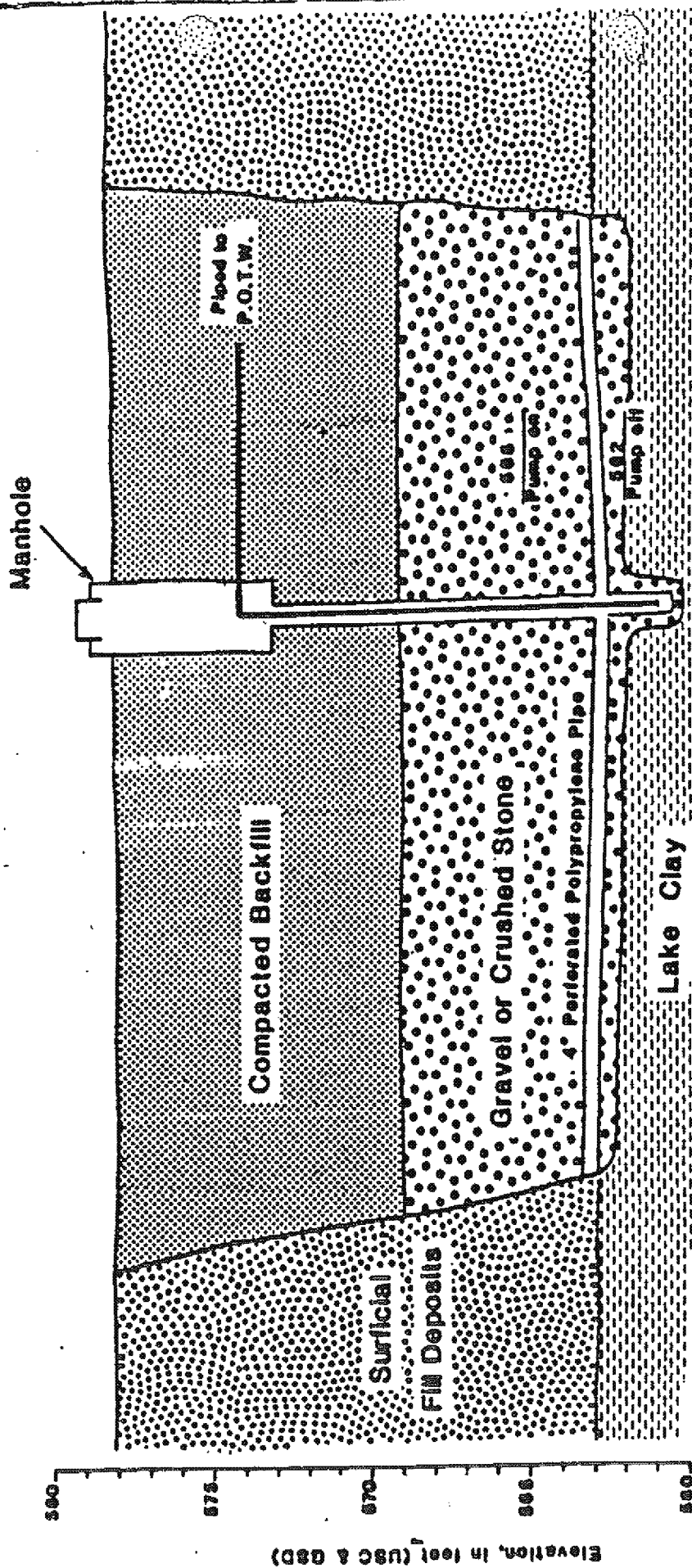
- MW 1 • Monitoring well  
 E1 ● Extraction well  
 P1 ▲ Piezometer



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EXHIBIT III  
 REMEDIAL PLAN FOR  
 AREAS A AND B

000595



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SOUTH WORKS

EXHIBIT IV  
 PROFILE ALONG  
 DRAINS - AREA A

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000594

Crowned to prevent  
water accumulation

Land surface

Compacted backfill

Gravel or crushed stone

4" perforated  
polypropylene pipe

2 to 6 ft

min 0.5 ft

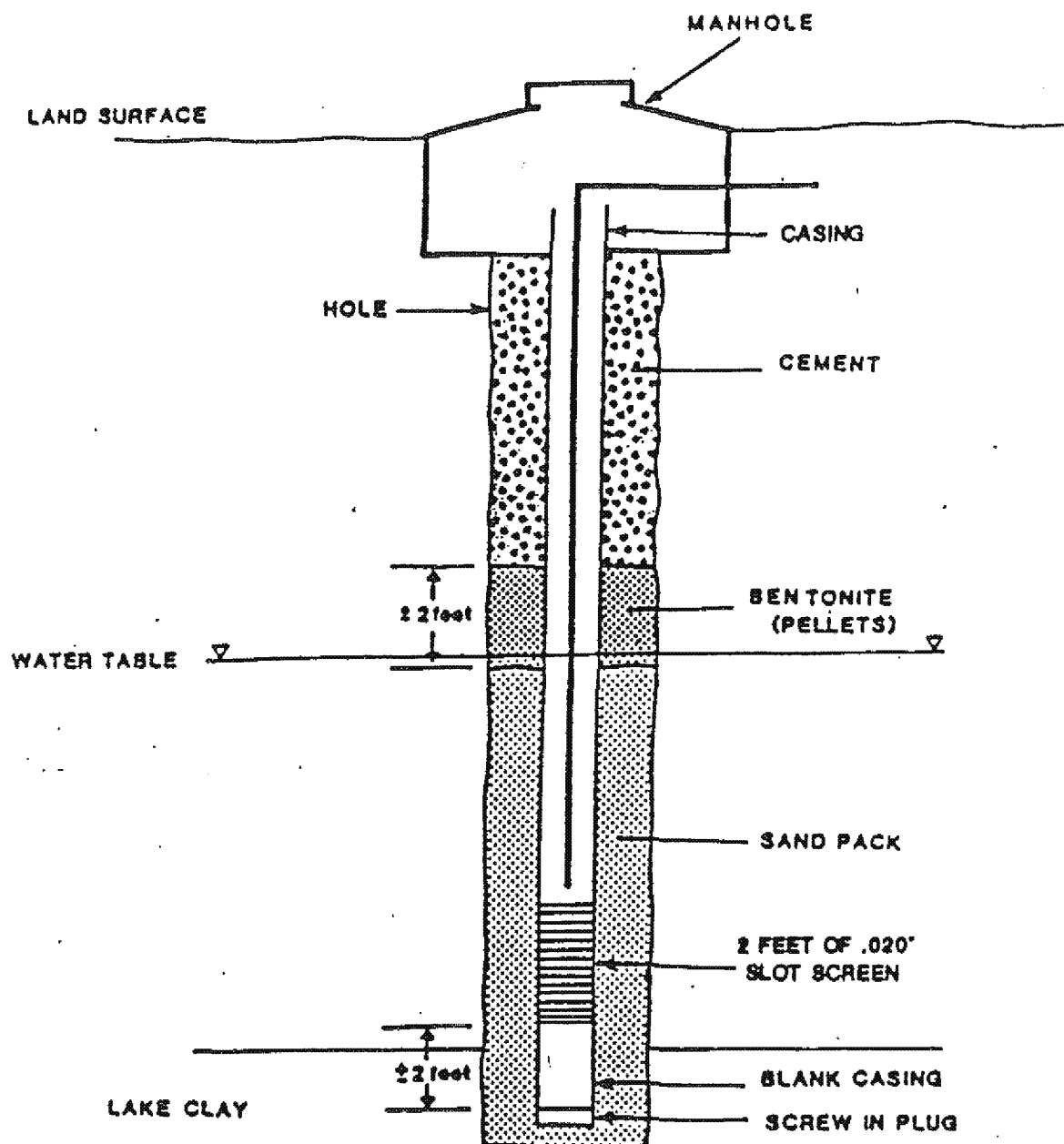
±3 ft

NOT TO SCALE

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EXHIBIT V  
SCHEMATIC DIAGRAM  
OF TYPICAL  
DRAIN CONSTRUCTION

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SOUTH WORKS

EXHIBIT VI  
CONSTRUCTION DETAILS  
OF EXTRACTION WELLS  
AREA B 000592

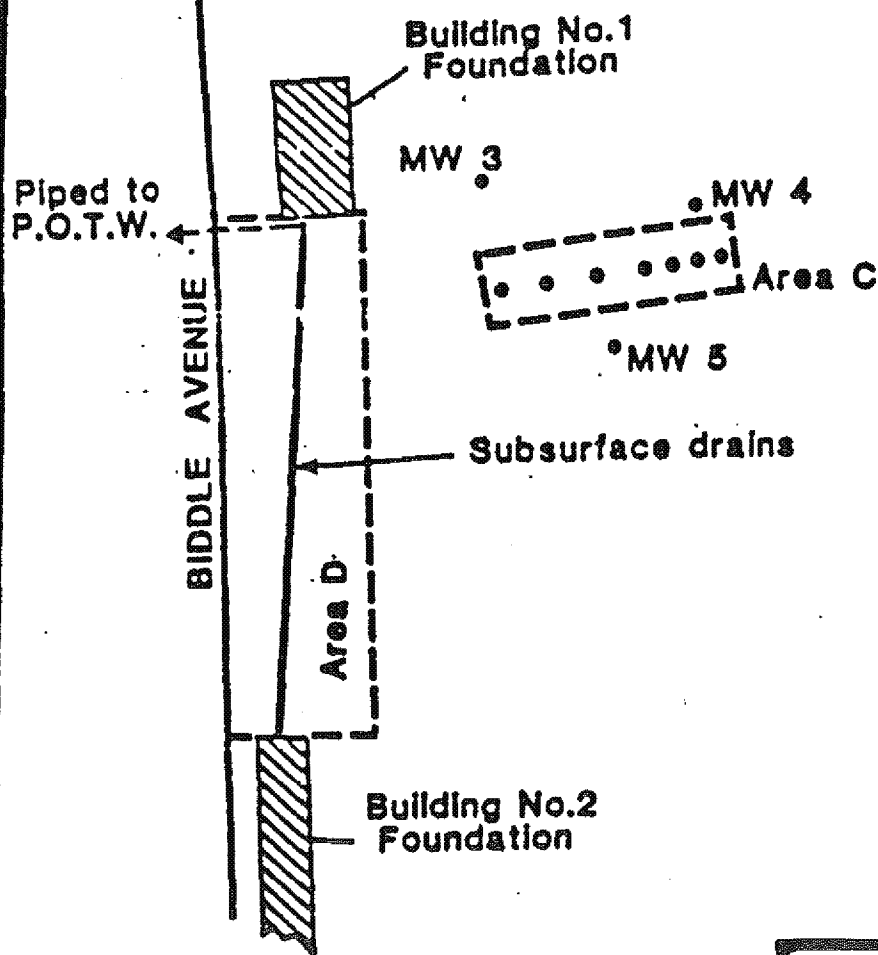


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PINE STREET

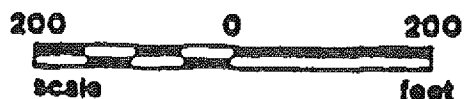


DETROIT RIVER



**LEGEND**

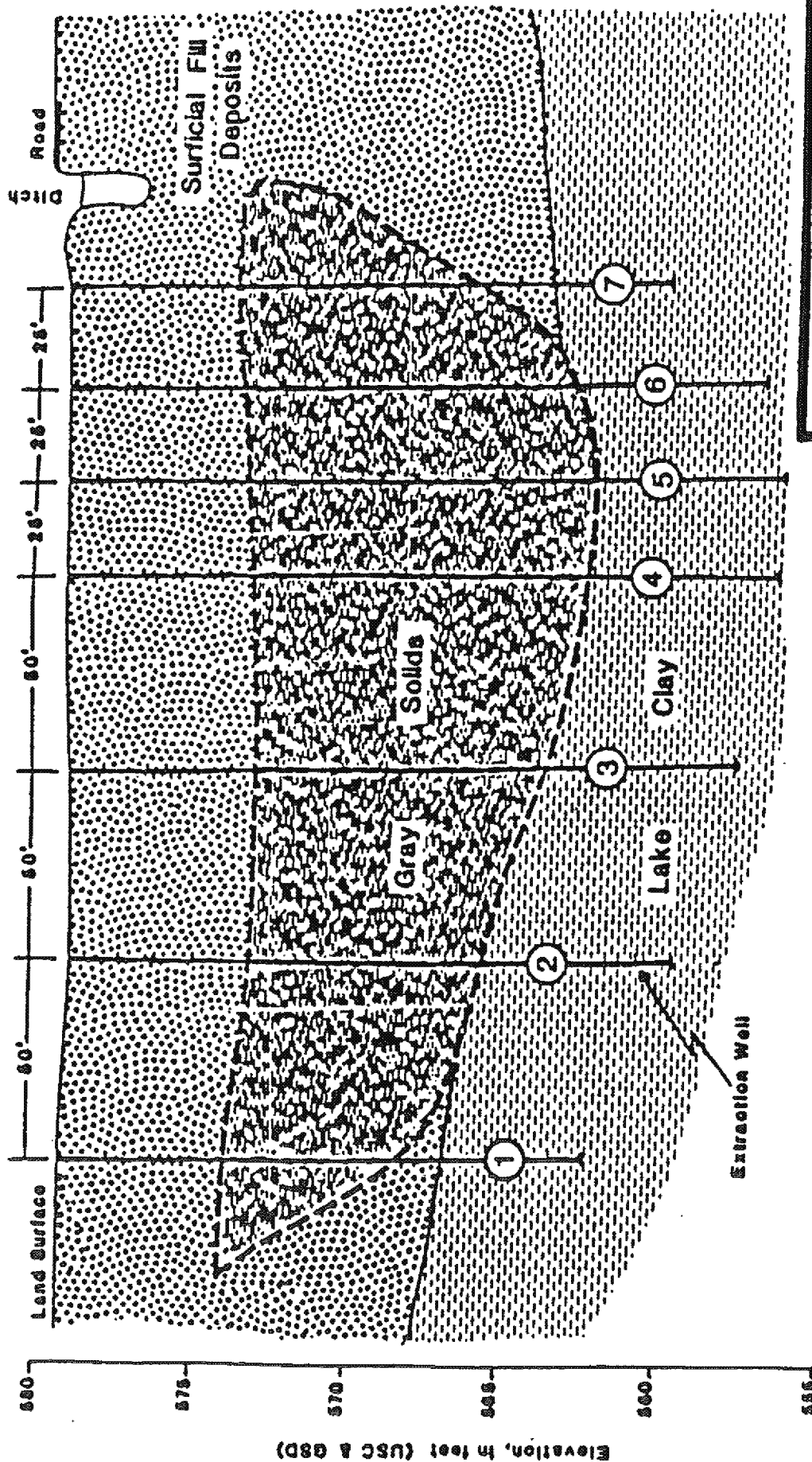
- MW 4 • Monitoring well
- Extraction well



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**SOUTH WORKS**

**EXHIBIT VII**  
**REMEDIAL PLAN FOR**  
**AREAS C AND D**

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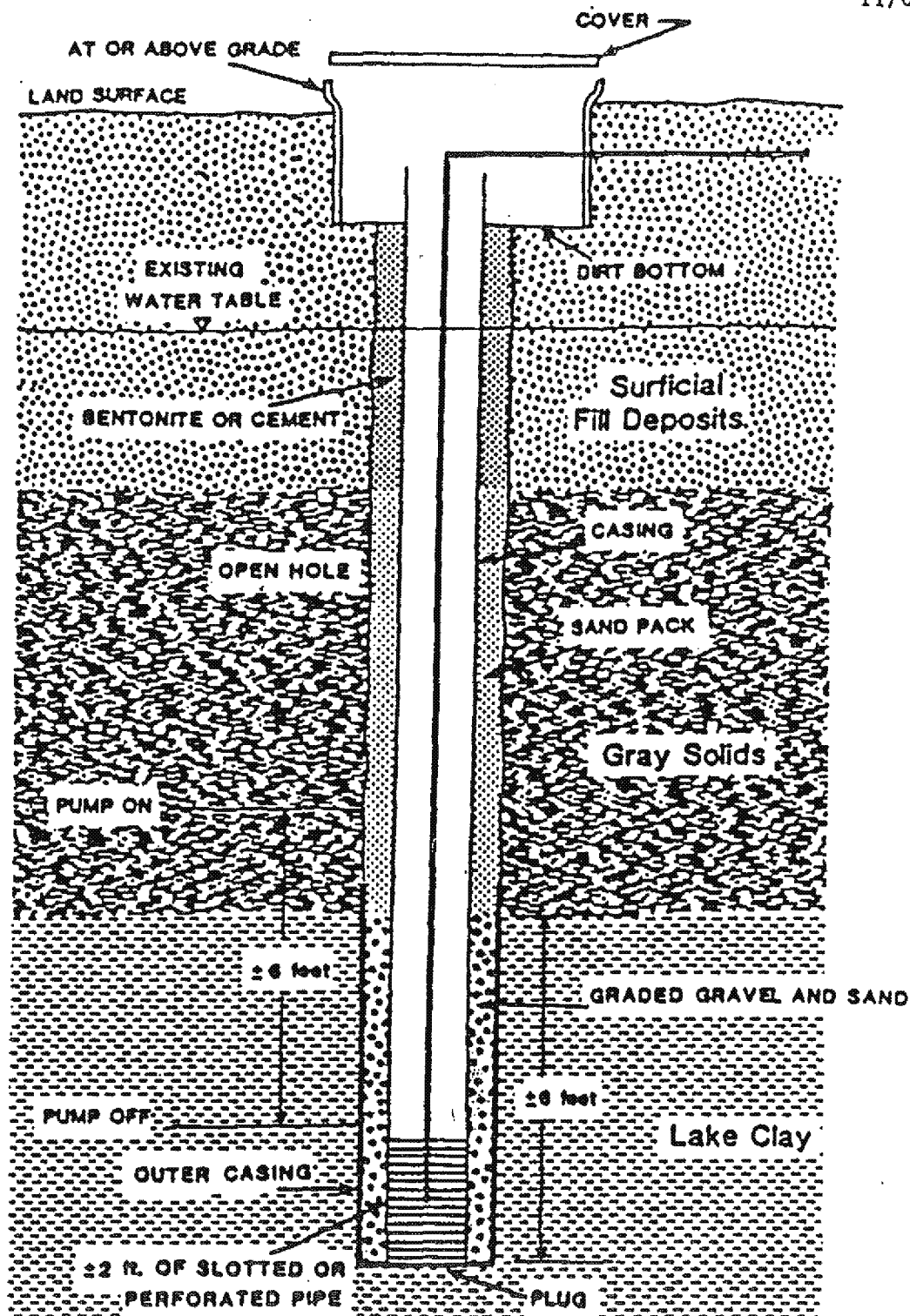
EXHIBIT VIII  
PROFILE ALONG LINE  
OF WELLS-AREA C

NOTE: See Exhibit IX for extraction well construction details.

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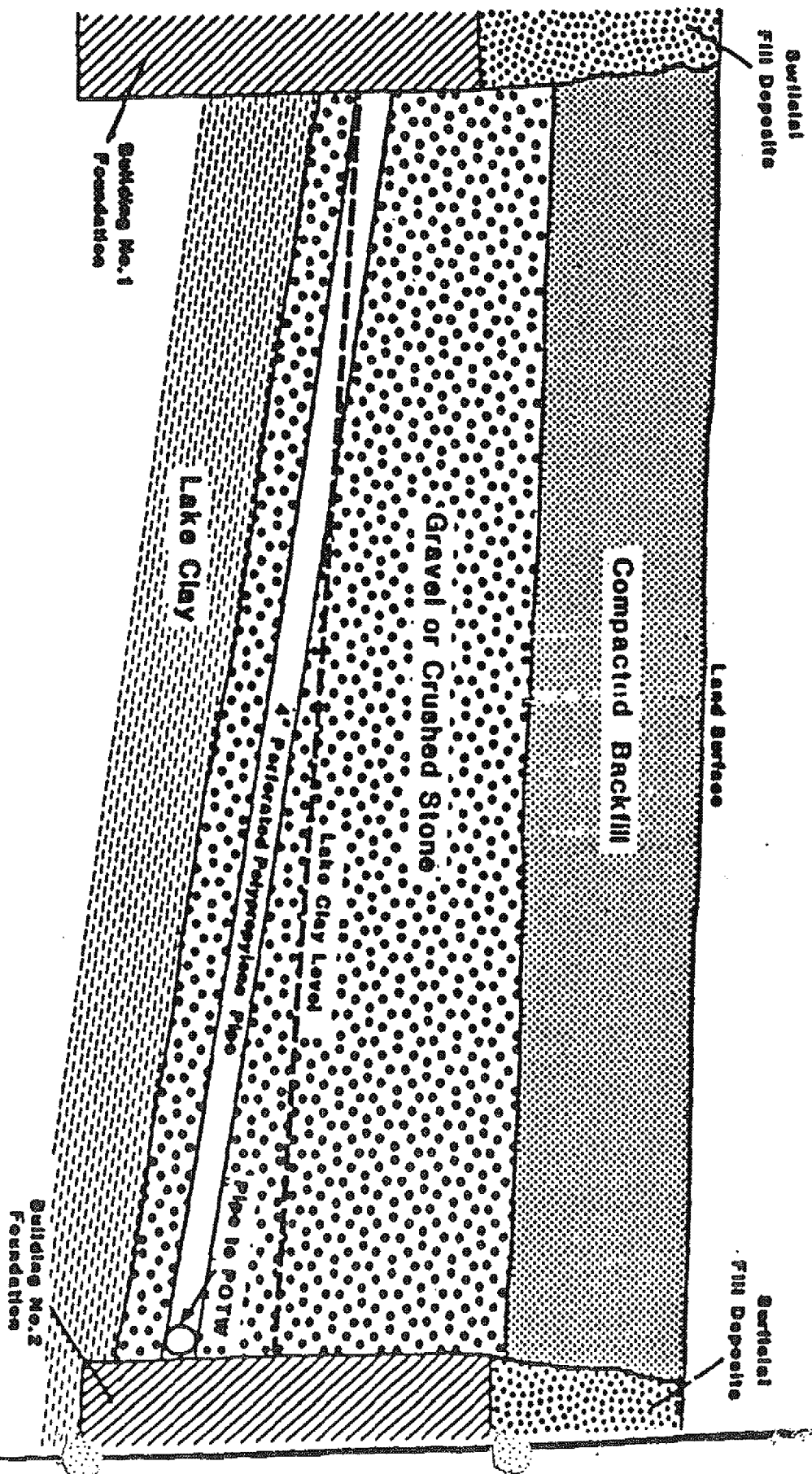


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SOUTH WORKS

EXHIBIT IX  
CONSTRUCTION DETAILS  
OF EXTRACTION WELLS

AREA C 000589

885000



# South Dox

**EXHIBIT X**

PROFILE ALONG  
DRAIN - AREA D